

# Seeing Stars

By Donna Latham

## Genre

**Expository nonfiction** gives information and facts.  
Read for facts about stars.

**How are stars different  
from each other?**





The background of the entire page is a composite image. The left side features a deep-space photograph of a star surrounded by a complex, swirling nebula of gas and dust, captured by the Hubble Space Telescope. A yellow callout box points to the star. The right side of the page shows a view of Earth from space, with the planet's horizon and blue atmosphere visible against the blackness of space. A large, bright sun is positioned in the upper center, partially overlapping the transition between the two images.

NASA's Hubble Space Telescope captured this image of gas and dust hurled by a gigantic, scorching-hot star. This star is about 20,000 light years, or 117 Quadrillion miles, from Earth!

It's a perfect night for stargazing. Twinkling stars, more than you can count, dot the dark sky. They glow like fireflies. Stars, pinpoints of light, line up in patterns, or constellations.

Why do stars only come out at night? Do the stars look the same? Which one moves—a star or the Earth? How can you connect stars to draw pictures in the sky? Find out, as you take a close-up look at these far-off fireballs!

## How I Wonder *Where You Are*

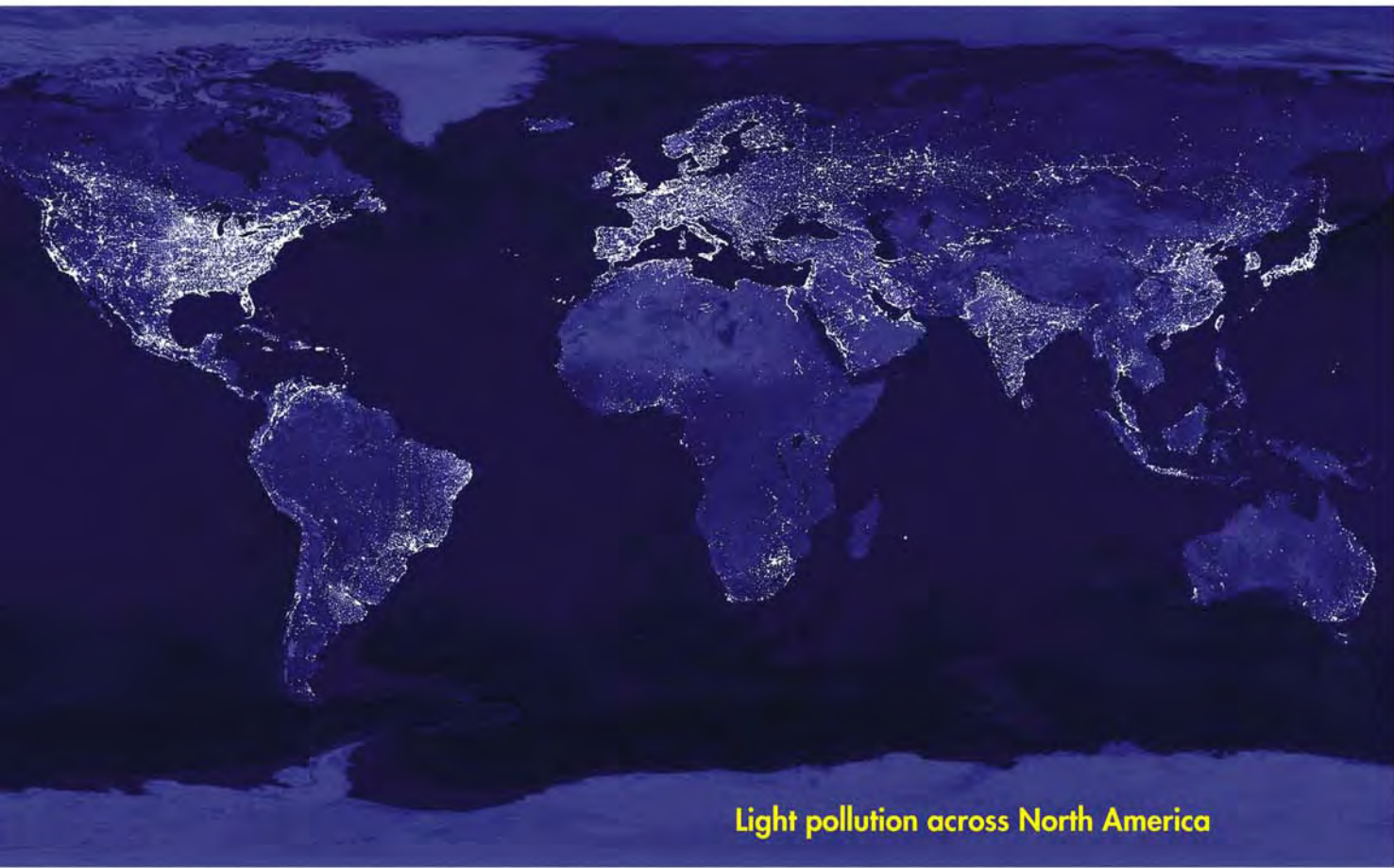
Stars are always in the sky. During the day, you can't get a glimpse of them. Why? Sunlight fills the sky. Its brightness makes stars invisible. When the Earth changes position and the sun sets, it's starlight's turn to shine.

From Earth, stars look like specks of glitter. That's because they're so distant. Stars are actually gigantic spheres of fiery gas. Earth's star, the sun, is one of these fireballs. When you see it from Earth, the sun appears to be the largest star in the sky.

Yet, the sun is actually medium-sized. Why does it look so massive? In vast space, distances are enormous. Even at a whopping 93 million miles away, the sun is the star *closest* to Earth. Our brilliant neighbor looks much bigger than far-off stars.







Light pollution across North America

Do you live in a city or large suburb? There, stars appear super-far away. Why? You're probably familiar with water, air, and noise pollution. Have you ever heard of light pollution? This intense nighttime light makes twinklers tough to see. In urban areas, smog can also block your view of stars.

When you are away from the city, you can see several thousand stars—with your eyes alone. They're part of our galaxy, the Milky Way. These stars give the impression they're close. In the country, it feels as if you can reach up and touch them.

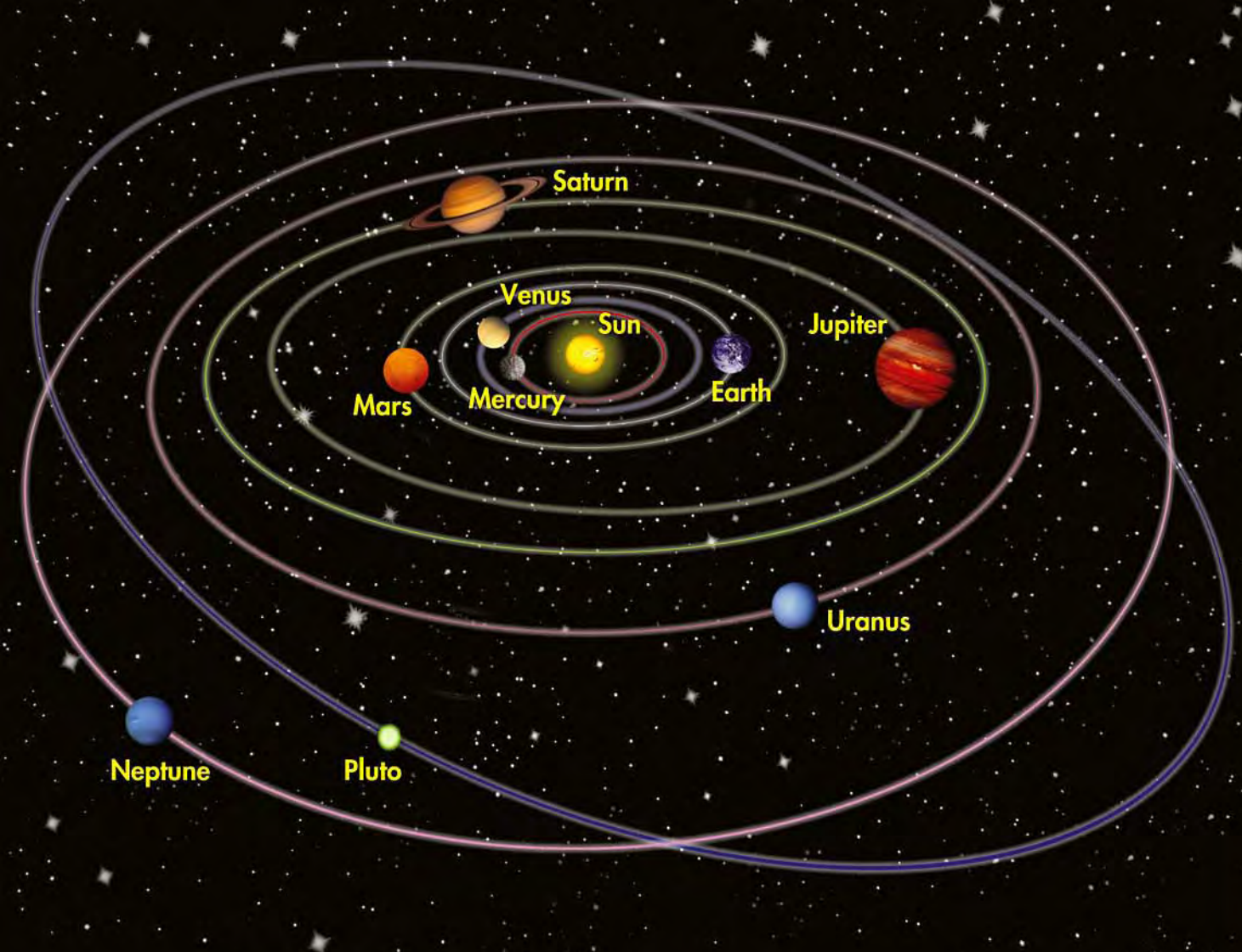
## See Far!

Other stars are so far-flung you can't see them without help. A telescope is just what the astronomer ordered! The word *telescope* is made of two Greek roots, *tele* and *scope*. *Tele* means "far." *Scope* means "see." A telescope makes distant objects appear much closer. That's not all . . . with a telescope, you can gaze at *millions* of stars.

When you peek up, you see that some stars shine brightly. Others are dim. At first, they all look white, but they're actually blue, white, yellow, and red. We think of the sun as very hot, but it's yellow, and blue stars have the hottest temperature. Red stars have the coolest.







## Moving Along

Have you ever noticed that stars appear to move? You can track them with your eyes. Constellations drift through the sky. From Earth, it looks like stars travel around us. Yet, the opposite is true. The Earth moves.

You can't feel it, but right now you're riding a huge merry-go-round. Earth spins through space as it orbits the sun—and what goes around comes around! Traveling at 1,000 miles per hour, it takes Earth about 24 hours to spin completely. That makes the sky change from day to night.

## Connect the Stars

People have watched the stars for thousands of years. Stargazers in early times named constellations after animals, shapes, and characters from mythology. The stars have not changed locations since then. You can still gaze into the sky and connect stars to create the same shapes and patterns.



Constellation map

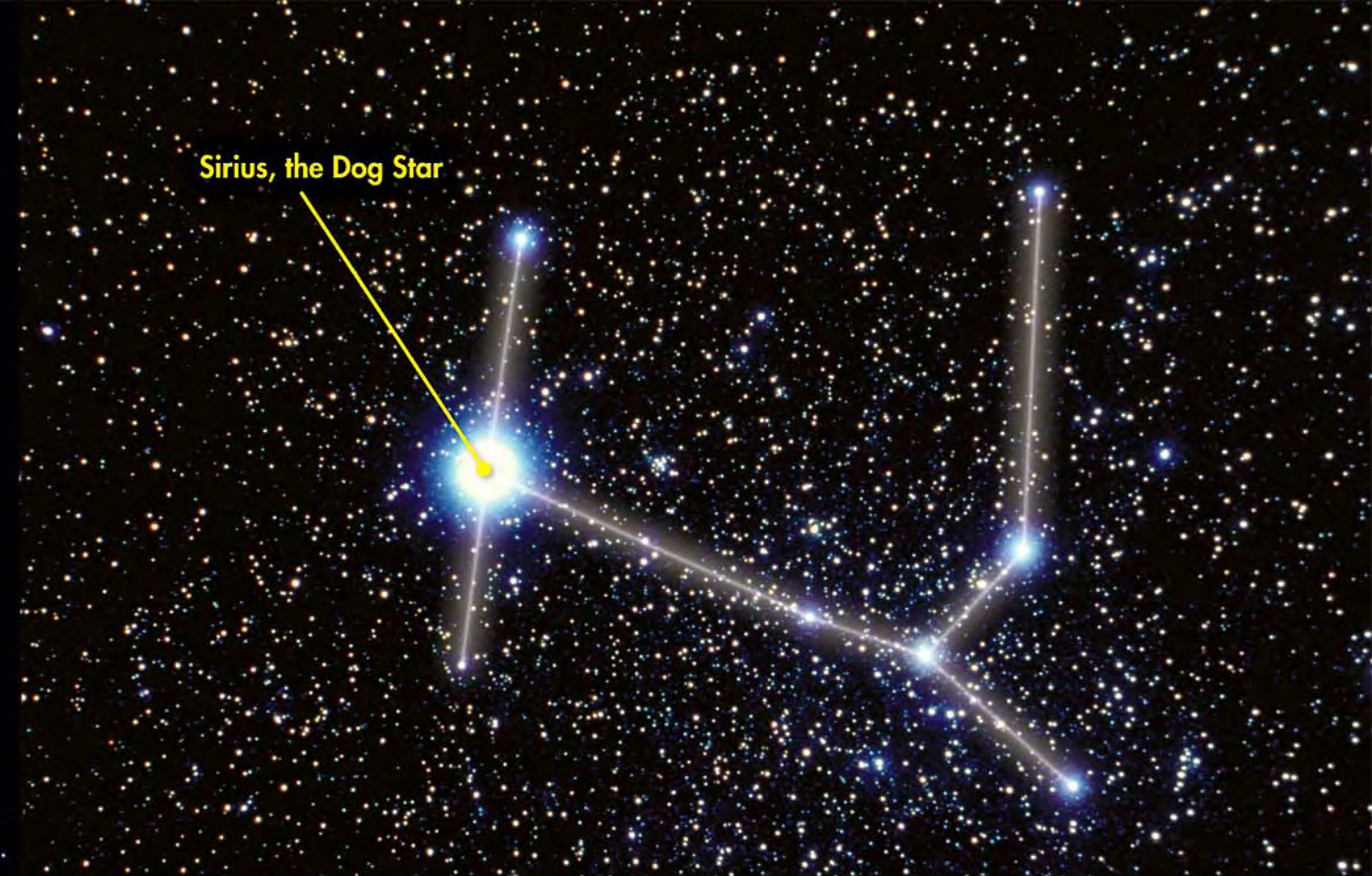
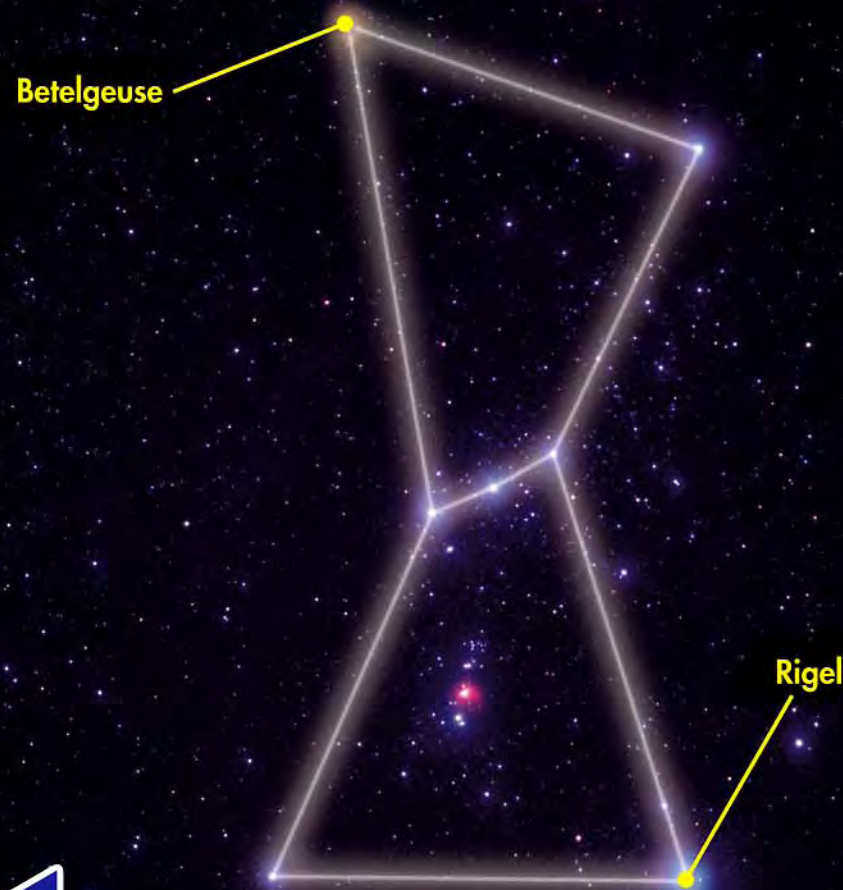




## Hunt for Orion

People in different parts of the world can gaze at different constellations. Meet Orion, a gem of the Northern Hemisphere's winter sky, named after a boastful hunter from Greek mythology.

A sword swings from his belt, which is formed of three stars. He holds a starry shield. Orion has two of the sky's brightest stars. Betelgeuse, a gigantic red star, shines brilliantly at his shoulder. A scorching blue-white star called Rigel shines in Orion's left foot. Rigel is 50,000 times brighter than our sun!



## Chase After Big Dog

Trotting after Orion is *Canis Major*, the Big Dog constellation. Big Dog has a head like a triangle and a perky tail. At its chest is blue-white Sirius, the Dog Star.

After the sun, Sirius is the brightest star we can see from Earth. That's because it's one of the stars closest to us even though it's nearly 6 trillion miles off! Its diameter is more than double the sun's.

In ancient times, people believed Sirius' bright light seared the Earth with summer heat. Today, the phrase "dog days of summer" describes the blistering period from July 3 to August 11. During this time, Sirius rises and sets with the sun.

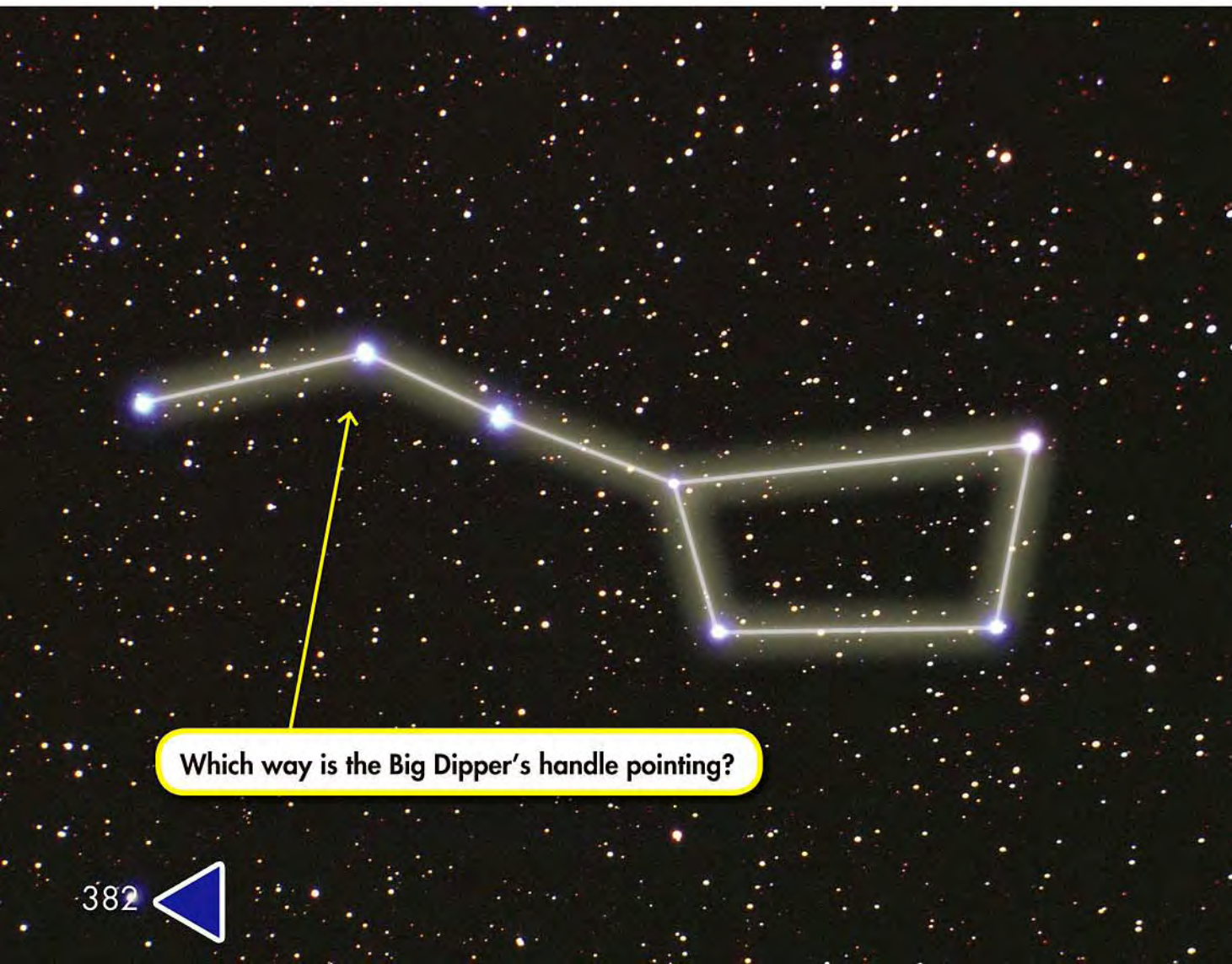




## Scoop Up the Big Dipper

The Big Dipper is a dazzler of the northern sky. It looks like a giant ladle. Connect the stars to see the Dipper's handle and bowl—but don't stop there! The Big Dipper is part of the *Ursa Major*, or Great Bear, constellation. The handle of the Dipper forms the bear's tail. The bowl is part of its body.

Because of Earth's movement, the Big Dipper's handle tips in different directions. The handle faces down in the winter. During the summer, it's up.



Which way is the Big Dipper's handle pointing?



## So Vast It Needs a New Word to Describe It!

Oh, my stars, the universe is ginormous! It appears to sprawl forever. How many stars does it hold altogether? No one knows for sure. NASA believes there are zillions. Astronomers claim that to tally all the stars would be as hard as counting grains of sand on a beach. It could take eons . . .



For now, keep seeing stars!